[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-0447; Project Identifier AD-2021-00131-E; Amendment 39-21692; AD 2021-17-09]

RIN 2120-AA64

Airworthiness Directives; Pratt & Whitney Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for all Pratt & Whitney PW1500G and PW1900G series turbofan engines. This AD was prompted by reports of cracks in the high-pressure compressor (HPC) rotor shaft that resulted in in-flight shutdowns (IFSDs) and unscheduled engine removals (UERs). This AD requires removal and replacement of the HPC front hub and HPC rotor shaft. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: For service information identified in this final rule, contact Pratt & Whitney, 400 Main Street, East Hartford, CT 06118; phone: (800) 565-0140; email: help24@pw.utc.com; website: https://fleetcare.prattwhitney.com/. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759. It is also available at https://www.regulations.gov by searching for and locating Docket No. FAA-2021-0447.

Examining the AD Docket

You may examine the AD docket at https://www.regulations.gov by searching for and locating Docket No. FAA-2021-0447; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for

Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7229; fax: (781) 238-7199; email: Mark.Taylor@faa.gov.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines. The NPRM published in the *Federal Register* on June 3, 2021 (86 FR 29707). The NPRM was prompted by reports of cracks in the HPC rotor shaft that resulted in vibration and subsequent IFSDs and UERs. The manufacturer determined that the threads on the HPC rotor shaft were not optimized for load distribution, which resulted in vibration stresses. During one occurrence, oil was released at the high-pressure turbine (HPT) disk bore location. The manufacturer redesigned the HPC front hub and HPC rotor shaft for increased durability and decreased vibration stress. The redesigned HPC front hub is made from nickel to help with corrosion resistance. The threads on the HPC rotor shaft were also redesigned to help distribute the load on the threads and decrease vibration stress. In the NPRM, the FAA proposed to require removal and replacement of the HPC front hub and HPC rotor shaft. The FAA is issuing this AD to address the unsafe condition on these products.

Discussion of Final Airworthiness Directive

Comments

The FAA received comments from one commenter, the Air Line Pilots Association, International (ALPA). ALPA supported the NPRM without change.

Conclusion

The FAA reviewed the relevant data, considered the comments received, and determined that air safety requires adopting the AD as proposed. Accordingly, the FAA is

issuing this AD to address the unsafe condition on these products. This AD is adopted as proposed in the NPRM.

Related Service Information

The FAA reviewed Pratt & Whitney Service Bulletin (SB) PW1000G-A-72-00-0154-00A-930A-D, Issue No. 001, dated May 7, 2021 (PW1000G-A-72-00-0154-00A-930A-D), and Pratt & Whitney SB PW1000G-A-72-00-0101-00B-930A-D, Issue No. 001, dated May 7, 2021 (SB PW1000G-A-72-00-0101-00B-930A-D). These SBs describe procedures for removing and replacing the HPC front hub and HPC rotor shaft.

Costs of Compliance

The FAA estimates that this AD affects 88 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Replace HPC front hub and HPC rotor shaft	25.75 work-hours x $85 per hour = $2,188.75	$120,090	$122,278.75	$10,760,530

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866,

(2) Will not affect intrastate aviation in Alaska, and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

2021-17-09 Pratt & Whitney: Amendment 39-21692; Docket No. FAA-2021-0447; Project Identifier AD-2021-00131-E.

(a) Effective Date

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to Pratt & Whitney PW1519G, PW1521G, PW1521G-3, PW1521GA, PW1524G, PW1524G-3, PW1525G, PW1525G-3, PW1919G, PW1921G, PW1922G, PW1923G, and PW1923G-A model turbofan engines.

(d) Subject

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

(e) Unsafe Condition

This AD was prompted by reports of cracks in the high-pressure compressor (HPC) rotor shaft that resulted in in-flight shutdowns and unscheduled engine removals. The FAA is issuing this AD to prevent cracking of the HPC rotor shaft. The unsafe condition, if not addressed, could result in release of a high-pressure turbine disk, damage to the engine, and damage to the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Action

At the next engine shop visit after the effective date of this AD, remove HPC front hub, part number (P/N) 30G1910 or 30G3210, and HPC rotor shaft, P/N 30G1854, 30G3109, 30G4995, 30G4953, or 31G0014, from service and replace each part with a part eligible for installation.

(h) Definitions

(1) For the purpose of this AD, an "engine shop visit" is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine case flanges, except for the following, which do not constitute an engine shop visit:

(i) Separation of engine flanges solely for the purposes of transportation without subsequent maintenance does not constitute an engine shop visit.

(ii) Separation of engine flanges solely for the purpose of replacing the fan without subsequent maintenance does not constitute an engine shop visit.

(2) For the purpose of this AD, a "part eligible for installation" is:

(i) For an HPC front hub: any HPC front hub with a P/N other than P/N 30G1910 or 30G3210; and

(ii) For an HPC rotor shaft: any HPC rotor shaft with a P/N other than P/N 30G1854, 30G3109, 30G4995, 30G4953, or 31G0014.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in Related Information. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(j) Related Information

For more information about this AD, contact Mark Taylor, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7229; fax: (781) 238-7199; email: Mark.Taylor@faa.gov.

(k) Material Incorporated by Reference

None.

Issued on August 12, 2021.

Lance T. Gant, Director,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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